

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 07 JUL 2004


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Applicant's or agent's file reference	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/01399	International filing date (day/month/year) 12.02.2003	Priority date (day/month/year) 08.03.2002
International Patent Classification (IPC) or both national classification and IPC A61K7/06		
Applicant UNILEVER PLC		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 07.07.2003	Date of completion of this report 05.07.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer Pelli Wablat, B Telephone No. +49 30 25901-335



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/01399**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-28, 30, 31 as originally filed
29 filed with telefax on 19.05.2004

Claims, Numbers

1-16 filed with telefax on 19.05.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1:WO-A-97 33559

D2:US-A-5 084 208

D3:US-A-5 415 857

D4: WO-A-93 08787 cited by the Applicant

1. Novelty (Art.33(2) PCT)

1.1. Document D1 discloses hair treatment compositions (see page 9, lines 12-15) comprising discrete droplets of silicone and mineral oil blends (see claims 1 and 3). The silicone of D1 can be amodimethicone (see page 12, ex 2).

D2 discloses hair treatment compositions (see col.5, lines 59-62) comprising discrete microdroplets of an oil (see col. 3, lines 5-36) including a high viscosity oil dispersed therein (see col 2, lines 12-17 and col. 3, lines 45-48).

However the functionalised silicones used in the droplets of D2 have now been excluded from claim 1.

Neither document D1 and D2 teach that the droplets comprise at least 5 w% of the droplet of a functionalised silicones and at least 5 w% of the droplet a hydrocarbon

Consequently claims 1 and 13 are considered to be novel in view of D1 and D2.

2. Inventive Step (Art.33(3)PCT)

2.1. Document D1 is considered to be the closest prior art for the subject-matter of claim 1.

The subject-matter of claim 1 differs from the disclosure of D1 in that claim 1 requires:
(1) functionalised silicones together with (2) mineral oil in specific percentages (multiple

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selections).

The Applicant has demonstrated that a composition comprising a preemulsified blend of hydrocarbon oil and dimethicone provides inferior conditioning benefits when compared to a composition containing a pre-emulsified blend of hydrocarbon oil and aminosilicone.

Consequently, the technical problem can be considered as the provision of hair care compositions comprising droplets containing silicone and mineral oils having improved conditioning properties (ease of comb and clean feel).

From D3 it is known to use aminosilicones in conditioning compositions. However, a skilled person had no incentive from D3 to use the components in the ranges as specified in claim 1.

Consequently the requirements of Art.33(3) PCT with respect to inventive step are considered to be met.

REPLACED BY
ART 34 AMDTTable 1

Ingredient	Trade Name	Supplier	Ex.1	Ex.2	Ex.B	Ex.A
Sodium laureth (2 EO) sulphate	Empicol ESB70	Albright & Wilson	16	16	16	16
Coco amidopropyl betaine	Tegobetaine CK	Goldschmidt	2	2	2	2
Guar Hydroxypropyl Trimonium Chloride	Jaguar C13S	Rhone Poulenc	0.1	0.1	0.1	0.1
Mineral Oil	Mineral oil M40	Fuchs Lubricants	1	-	-	-
Amino silicone	DC8220	Dow Corning	-	1	-	-
Pre-emulsified blend of 0.5 Mineral oil+0.5 Amino silicone DC8466	-	-	-	-	1	-
Pre-emulsified blend of 0.5 Mineral oil+ 0.5 Amino silicone DC8200	-	-	-	-	-	1
Water	-	-	to 100	to 100	to 100	to 100

The aminosilicone DC8220 has a viscosity of $150 \text{ mm}^2 \text{ s}^{-1}$ at

5 25°C and a weight percent amine functionality of 2.0%.

The aminosilicone DC8466 has a viscosity of $15000 \text{ mm}^2 \text{ s}^{-1}$ at 25°C and a weight percent amine functionality of 2.3%.

Mineral oil M4 has a viscosity of $4.3 \text{ mm}^2 \text{ s}^{-1}$ at 25°C .

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Test Method

Hair switches were oiled with commercially available oil, which is a blend of 60% coconut oil and 40% mineral oil (M40). 0.5ml of oil was applied on to the switches and the

CLAIMS

1. A composition for hair treatment comprising discrete droplets characterised in that the droplets, within the same
5 droplet comprise both;
 - (i) a functionalised silicone and,
 - (ii) a hydrocarbon oil.
- 10 2. A composition according to claim 1 comprising at least 0.25% by weight of the discrete droplets.
3. A composition according to any preceding claim wherein the discrete droplets comprise at least 5% by weight of
15 functionalised silicone and at least 5% by weight of hydrocarbon oil expressed as a percentage of the weight of the droplets.
4. A composition according to any preceding claim, wherein
20 the functionalised silicone is an amino-functionalised silicone.
5. A composition according to claim 4 wherein the amino-functionalised silicone has a weight percentage amine
25 functionality from 0.3% to 8%, preferably from 0.5% to 4%.
6. A composition according to any preceding claim wherein the hydrocarbon oil has a kinematic viscosity of less than
500 mm²s⁻¹ at 25°C.

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7. A composition according to any preceding claim wherein the kinematic viscosity of the functionalised silicone is less than $1000 \text{ mm}^2 \text{ s}^{-1}$ at 25°C .

5 8. A composition according to any preceding claim wherein the mean droplet diameter ($D_{3,2}$) of the discrete droplets is from 0.05 to 25 micrometres.

9. A composition according to any preceding claim wherein
10 the discrete droplets further comprise an emulsifying agent.

10. A composition according to claim 9 wherein the emulsifying agent comprises a nonionic surfactant.

15 11. A composition according to any preceding claim wherein the discrete droplets are added to the composition as a non-aqueous phase of a pre-formed aqueous emulsion.

12. A composition according to any preceding claim which is
20 a shampoo composition comprising at least one cleansing surfactant selected from anionic, cationic, nonionic, amphoteric and zwitterionic surfactants and mixtures thereof.

25 13. A composition according to any one of claims 1 to 11, which is a conditioner composition comprising at least one conditioning surfactant and a fatty alcohol and/or an alkoxylated fatty alcohol.

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ART 34 ANDT

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14. A method for incorporating discrete droplets comprising both a functionalised silicone and a hydrocarbon oil in the same droplets, into a hair treatment composition, comprising the steps of;

- 5 i) forming an intimate, non-aqueous blend comprising the functionalised silicone and the hydrocarbon oil,
- ii) preparing an aqueous emulsion comprising droplets comprising both a functionalised
- 10 silicone and a hydrocarbon oil in the same droplets and
- iii) mixing said aqueous emulsion with the hair treatment composition.

15 15. A method according to claim 14 wherein the aqueous emulsion further comprises an emulsifying agent.

16. The use of a hair treatment composition according to any one of claims 1 to 12 for the conditioning of hair.

20

17. The use of a hair treatment composition according to any one of claims 1 to 12 as a conditioning shampoo.